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PATENT SPECIFICATION

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DRAWINGS ATTACHED

1 208 281

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- (72) Inventor THOMAS PORTER



(54) IMPROVEMENTS IN OR RELATING TO APPARATUS FOR HEAT-SEALING OUTLETS TO PLASTICS BAGS OR LIKE PLASTICS CONTAINERS

(71) We, PORTER - LANCASTRIAN LIMITED, a British Company of, Lancastrian Works, Bayley Street, Chorley Old Road, Bolton, Lancashire, do hereby declare this invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

The invention concerns the heat sealing of plastics materials and has more particular reference to the application of a synthetic plastics outlet to the surface of a lay-flat tube of polythene or like synthetic plastics material.

A method of making a sterile, flexible, inflatable container is known which comprises the steps of forming an interior sterile bag or sleeve of flexible material, inserting it within an exterior bag or sleeve, sealing a shaped rigid outlet to the outer surface of the exterior bag, sealing the region of the interior bag to the exterior bag in the region of the outlet such that the container may be eventually opened by piercing both bags at the outlet, and closing both the exterior and interior bags or sleeves where necessary such that both bags are united by a common seal along at least one edge.

In the method aforesaid the sterile bag is of two-ply construction, the outlet being secured to the outer surface of the exterior bag and the inner and outer bags being secured together in the region of the outlet. To maintain the sterility of the inner bag, such bag was formed as a closed envelope, such closed envelope being secured to the outer bag by an adhesive.

The present invention is predicated upon the appreciation that if the outlet can be secured to the inner bag without rendering such bag non-sterile, the need to provide an exterior bag is eliminated.

The problem has been, however, to provide a heater element within the lay-flat tube without slitting such tube, it having been

believed heretofore that electric wires or the like and/or supports for the heater element would necessitate the use of a slitted tube or a folded sheet the edges of which were heat sealed subsequently to the attachment of the outlet.

The primary object of the present invention is to provide a means whereby a platen for co-operation with a sealing element can be supported within an initially flat tubular web.

According to the present invention we provide an apparatus for heat sealing outlets to plastics bags or like plastics containers which includes a floating platen assembly comprising a carriage, and a support means upon which the said carriage rests, the said carriage including a platen applied to the carriage for co-operation with an external heat sealing element and having a guide means arranged to maintain the carriage in a requisite disposition relative to a tubular web of bag forming material within which the said carriage is located during longitudinal movement of the tubular web relative to the carriage, the carriage and the support means therefor, which latter is outside the tube, co-operating to prevent movement of the carriage relative to the support means in the longitudinal direction of the tubular web.

In a preferred arrangement apparatus for heat sealing outlets to plastics bags or like plastics containers including a floating platen assembly comprises two spaced parallel support members, a carriage for siting within a tubular web of the bag forming material and being supported on the said members through the tube, and mounting means on the said carriage for co-operation with the support members, the carriage including a platen applied to the carriage for co-operation with an external heat sealing element and further including a plurality of spaced parallel line members extending in

a first direction and spaced parallel members secured thereto and extending in a second direction transversely of such first direction, and the mounting means comprising a plurality of rollers at each side of the carriage and engageable with the support members.

Preferably the support means comprises spaced support members, for example rollers, and the carriage presents tines extending in the direction of movement of the tube.

The invention will now be described further, by way of example only, with reference to the drawing filed with the provisional specification in which:—

Fig. 1 is a plan view of a carriage arrangement embodying the invention; and

Fig. 2 is a section on line A-A of Fig. 1.

Referring now to the drawing, a carriage arrangement for providing a platen 11 within a moving lay-flat tube 12 comprises a carriage 13 consisting of a plurality of tine members 14 arranged in spaced, parallel disposition on two rods 15 and two parallel rollers 16 upon which the said carriage 13 is supported by mounting-rollers 17 secured to the outermost tine members.

The tine members 14, when viewed in side elevation, have a generally rectangular central portion 14a, the forward and rearward ends 14b of such members tapering towards their extremities. Conveniently the ends 14b of the tine members are defined by strip elements 14b' secured to the central portion 14a of the tine member, which elements converge away from the said central portion. The tine members are also of reducing width, when viewed in plan, towards their ends. The rods 15 extend through the tine members 14 at right angles thereto, and protrude beyond the two outermost such members for a purpose hereafter to be made apparent.

Four mounting-rollers 17 are secured adjacent to the outer faces of the outermost tine members for rotation about axes parallel to the rods, the said mounting-rollers 17 being paired and the two rollers of each pair being arranged in closely spaced disposition.

The support-rollers 16 are freely rotatable in bearings carried by a machine frame (not shown) and the dimensions of the support and mounting-rollers and the separation of the latter are such as to allow of the stable mounting of the carriage on the former.

A guide-tine member 18 is provided at each end of the carriage, the said members 18 being mounted on the extremities of the rods 15. Each guide-tine member has a body portion 18a firmly secured to the rods 15 and a pivotable nose 18b at each of the forward and rearward ends of such portion. The pivotable noses are spring-loaded outwardly of the carriage by a resilient means 19 disposed between a bracket 20 secured to the

body portion 18a adjacent the nose 18b and the surface of the nose.

In use, a lay-flat tube 12 is guided in known manner to the area of the carriage 13, the carriage being positioned within the tube as is clearly apparent from Fig. 2. The tine members 14, 18 separate the layers of material and the uppermost layer moves across the platen 11, an outlet (not shown) being located on the web above the platen in any convenient way. At an appropriate stage in the cycle of operation the outlet is heat-sealed to the web, any known technique which does not require a physical connection between the platen and a location external to the tube being utilised. After application of the outlet the tube is advanced and is heat-sealed transversely of its length.

The resilient character of the noses on the guide tine members relative to the body of such members assists in the guiding of the tube, whilst appropriate guide means will be provided to position the carriage.

As an alternative to providing resiliently mounted noses to the guide-tine members, it may be found preferable resiliently to mount the whole of such guide members on the rods.

We believe that by sealing the outlet directly to a lay-flat tube we can facilitate the manufacture of a sterile bag and can form such bags as a continuous operation from an extruder in a practical and economic manner. It is to be observed that once the first transverse seal is made in the lay-flat tube, the tube is closed and thus the interior remains sterile. Hence, as a continuous process, sterile closed bags are produced.

The invention is not limited to the exact features of the embodiment hereinbefore described since alternatives will readily present themselves to one skilled in the art.

WHAT WE CLAIM IS:—

1. Apparatus for heat sealing outlets to plastics bags or like plastics containers including a floating platen assembly comprising a carriage, and a support means upon which the said carriage rests, the said carriage including a platen applied to the carriage for co-operation with an external heat sealing element and having a guide means arranged to maintain the carriage in a requisite disposition relative to a tubular web of bag forming material within which the said carriage is located during longitudinal movement of the tubular web relative to the carriage, the carriage and the support means therefor, which latter is outside the tube, co-operating to prevent movement of the carriage relative to the support means in the longitudinal direction of the tubular web.

2. Apparatus as claimed in claim 1

wherein the carriages includes a mounting means co-operable with the support means for location of the carriage thereon.

3. Apparatus as claimed in claim 2, wherein the support means comprises two spaced support members.

4. Apparatus as claimed in claim 3, wherein the said support members comprise rollers.

5. Apparatus as claimed in claim 2 or 3, wherein the mounting means comprise at least two rollers at each side of the carriage.

6. Apparatus as claimed in any one of the preceding claims, wherein the carriage includes spaced parallel tines, and elements extending transversely of the tines and to which such tines are secured.

7. Apparatus as claimed in claim 6, wherein the said tines are each of tapered configuration at the opposite ends thereof.

8. Apparatus as claimed in any one of the preceding claims, wherein the said carriage has a guide tine at two opposite edges thereof, one or both of the said guide tines or a part thereof being resiliently displaceable transversely of the carriage.

9. Apparatus as claimed in claim 8, wherein each of the said guide tines has a displaceable nose provided at each end thereof.

10. Apparatus as claimed in claim 8 or 9, wherein the whole or a part of one or both of the guide tines is or are displaceable against the restraint of spring means.

11. Apparatus for heat sealing outlets to plastics bags or like plastics containers including a floating platen assembly com-

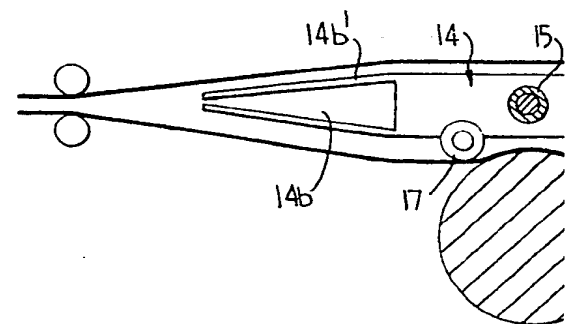
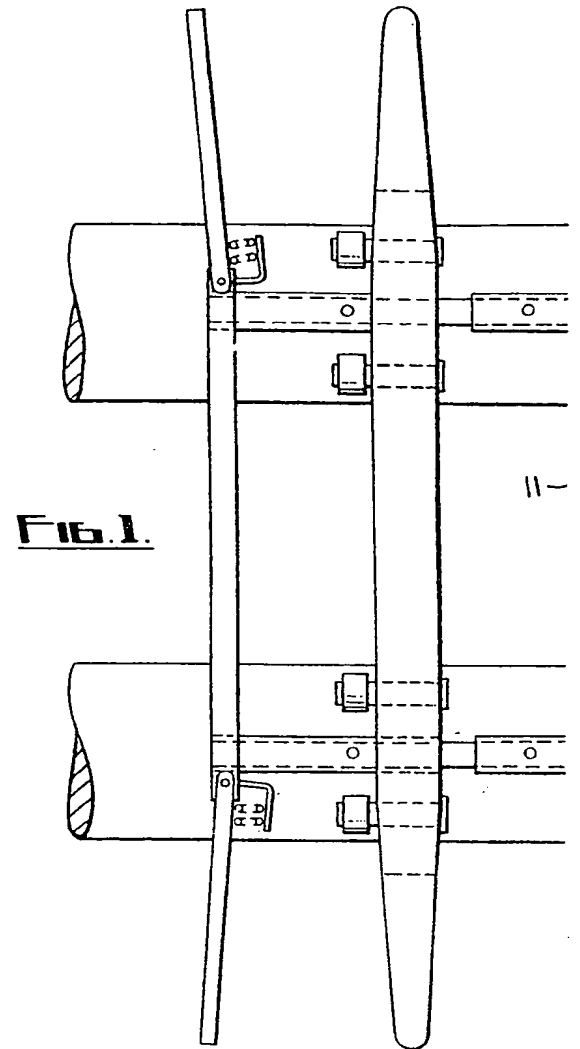
prising two spaced parallel support members, a carriage for siting within a tubular web of the bag forming material and being supported on the said members through the tube, and mounting means on the said carriage for co-operation with the support members, the carriage including a platen applied to the carriage for co-operation with an external heat sealing element and further including a plurality of spaced parallel time members extending in a first direction and spaced parallel members secured thereto and extending in a second direction transversely of such first direction, and the mounting means comprising a plurality of rollers at each side of the carriage and engageable with the support members.

12. Apparatus as claimed in claim 11, wherein a guide tine is provided at each side of the carriage and extending in said first direction, the extremities of each such tine being displaceable in the transverse direction thereof against resilient means.

13. Apparatus as claimed in claim 11 or 12 wherein each tine is of tapered configuration at each of its opposite ends.

14. Apparatus for heat sealing outlets to plastics bags or like plastics containers including a floating platen assembly substantially as hereinbefore described with reference to and as illustrated in the drawings filed with the provisional specification.

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1 SHEET

COMPLETE SPECIFICATION

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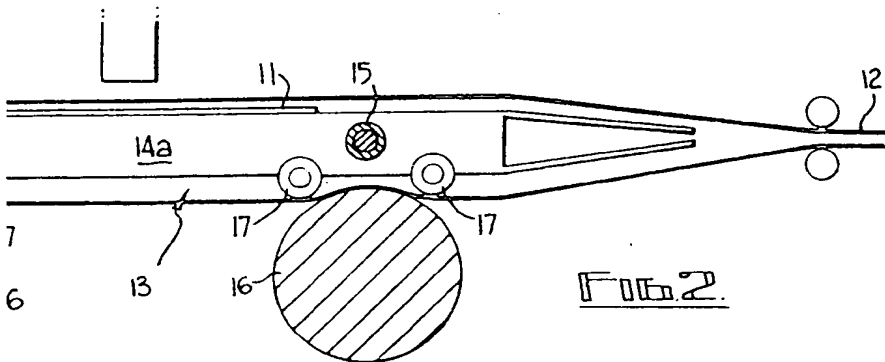
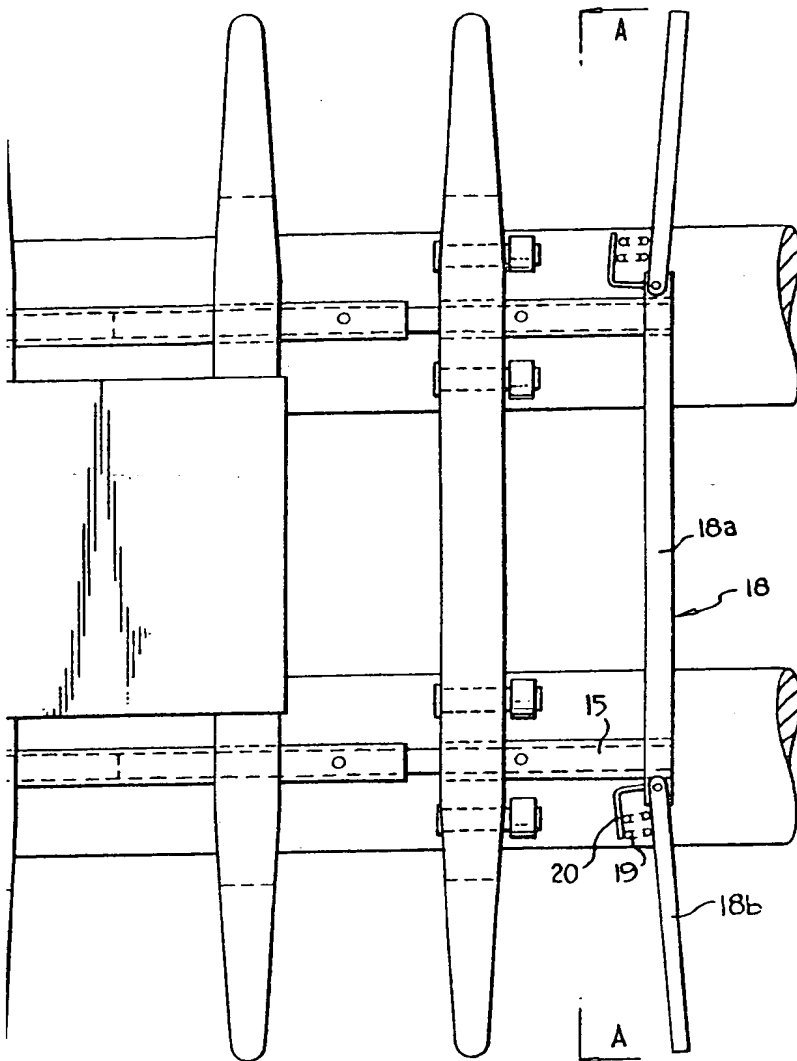


FIG. 2.

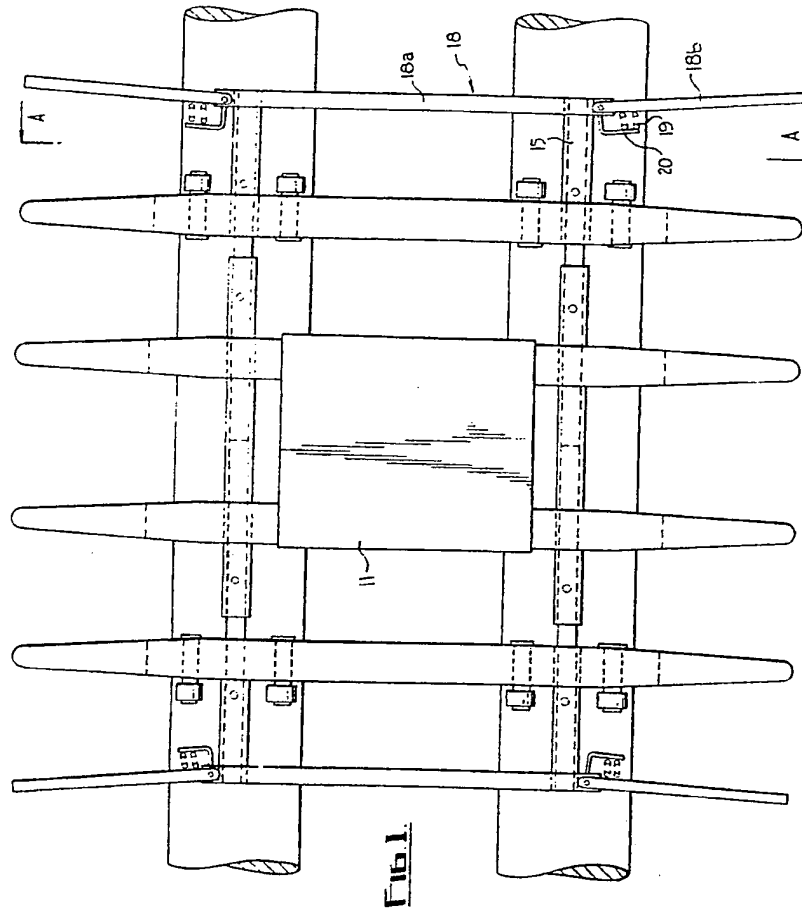


Fig. 1.

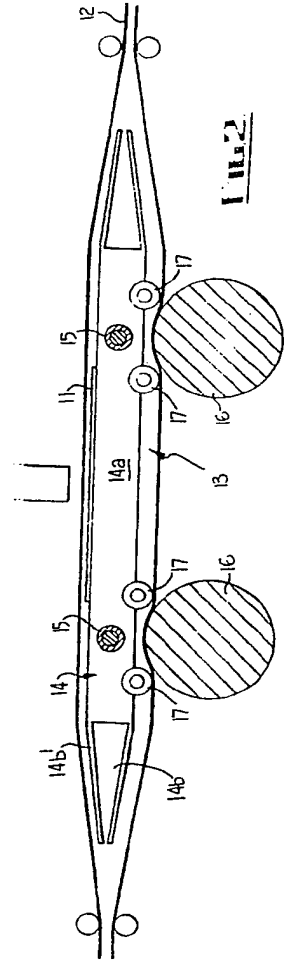
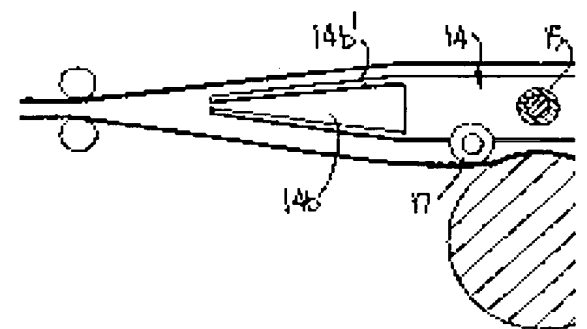
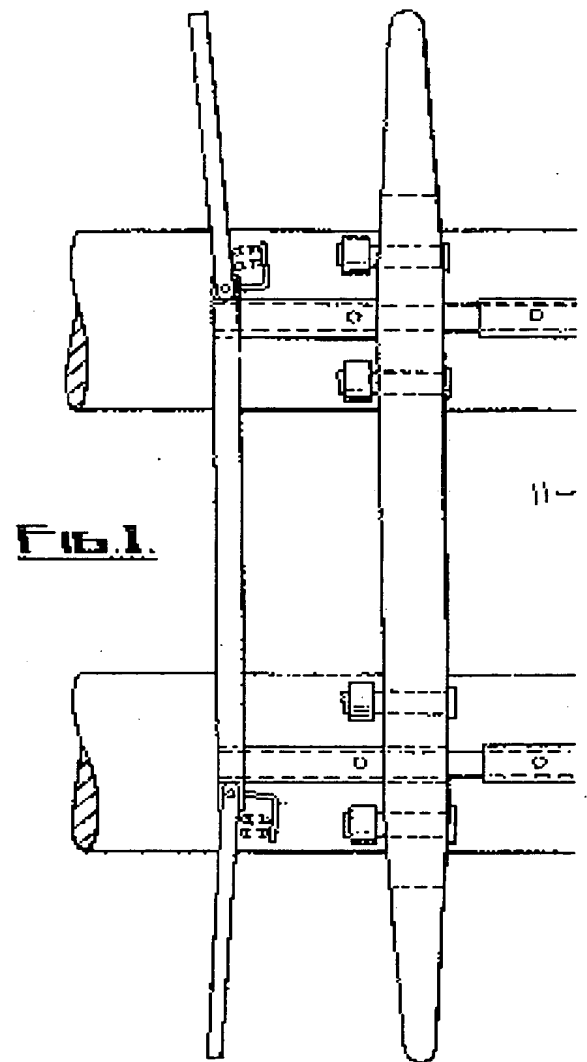


Fig. 2.



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1 SHEET

COMPLETE SPECIFICATION

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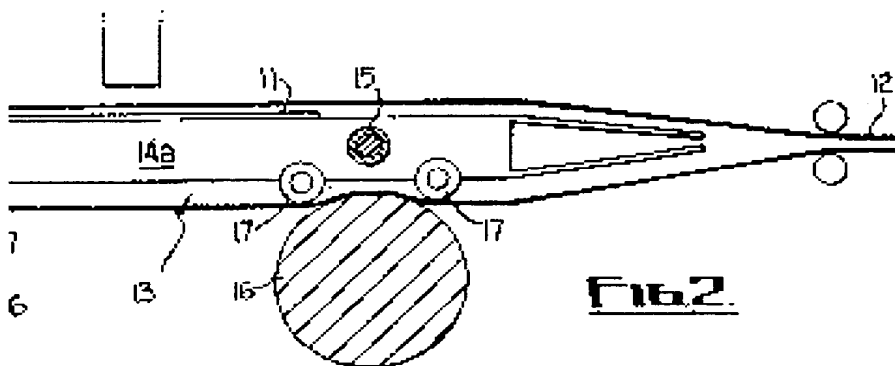
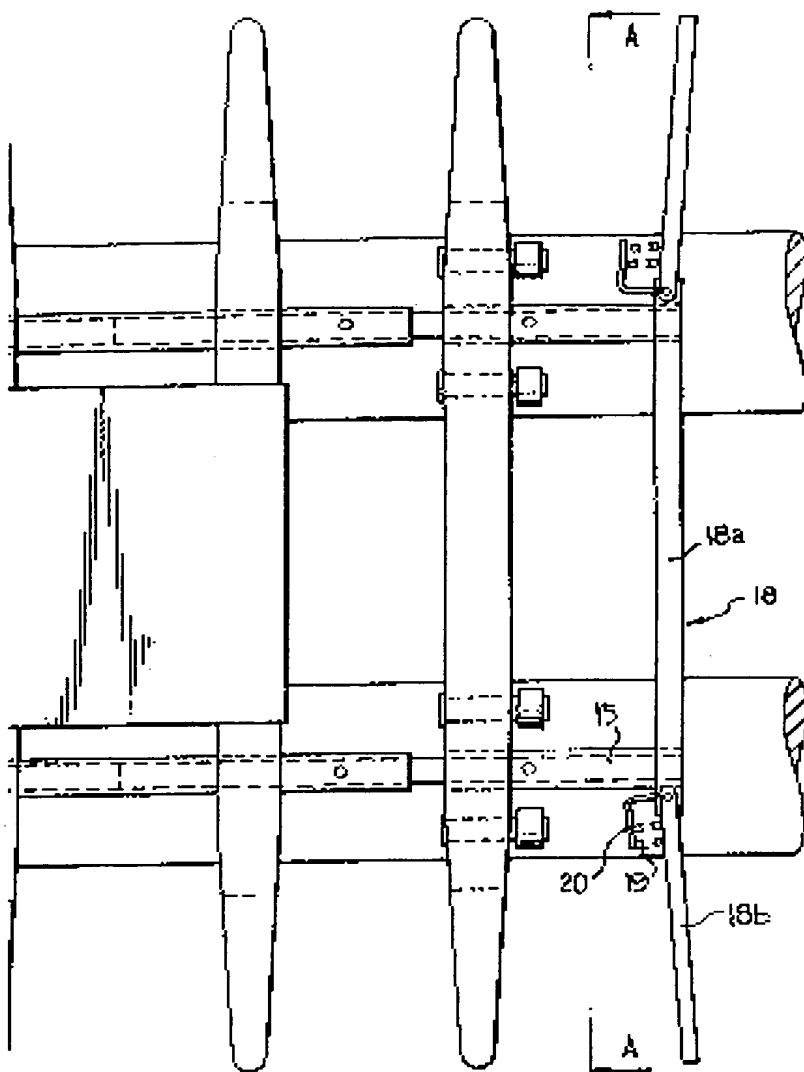


Fig. 2

